9. Melissa

Program Name: Melissa.java **Input File: melissa.dat**

Given any positive integer *i*, *i* can be transformed by multiplying all of its non-zero digits. If this process is repeated enough times, the integer will eventually be transformed into a single digit *d* in the range [1,9]. For example, consider the integer 62032. Multiplying 6*2*3*2 gives the product of 72 (zero is not considered in the product as only non-zero digits are used). Multiplying 7*2 gives the product of 14. Multiplying 1*4 gives the product 4. 4 is in the range of [1,9]. Melissa needs your help writing a program, that given any positive integer will output the single digit that number is transformed to, given the transformation process described above.

Input: Input begins with an integer N (1 <= N <= 20), the number of different test cases. Each of the following N lines will contain a single integer *i* (1 <= *i* <=100000).

Output: For each test case, your program is to output `i -> d`, where `i` is the given input integer and `d` is the single digit `i` is transformed into.

Sample Input:

```
7
62032
808
20
9
1023456
99999
10
```

Sample Output:

```
62032 -> 4
808 -> 8
20 -> 2
9 -> 9
1023456 -> 4
99999 -> 2
10 -> 1
```